Marijuana Education
&
Dispensary Safety

(M.E.D.S.)

Designed as an in-depth guide to medical marijuana in Colorado, this presentation examines legal, safety, scientific, personal, and societal consequences of the drug's use as medicine with an intended audience comprised of both the law enforcement and patient communities.

I. About This Booklet:

Purpose of This Booklet:

In the year 2000, Colorado voters passed Amendment 20, which allows patient's with specific debilitating medical conditions to use marijuana with their physician's approval. Now 7 years later, Colorado has seen a slow, but steady increase in both licensed medical marijuana patient's as well as dispensaries, cooperatives, and caregiver partnerships. Given the extremely volatile atmosphere concerning the medical legitimacy of marijuana in addition to rising patient numbers, it is inevitable that a patient, caregiver, or dispensary will have contact with the law enforcement community. Indeed, this has already been the case in both Larimer and Denver Counties.

The purpose of this booklet is four-fold:

1. To educate the law enforcement community about the legality of medical marijuana in Colorado.
2. To offer proper safety guidelines for the protection of both the patient and the community as dispensaries and cooperatives develop.
3. Give a brief background in science, focusing on harmful side effects, medical validity, and proper usage guidelines.
4. To open a line of friendly communication between representatives of both the medical marijuana and law enforcement communities.

Disclaimer:

The contents of this booklet have been collected from peer-reviewed publications, interviews with doctors, researchers, medical marijuana patients, dispensary owners, and attorneys. None of the authors make claim to practice these activities themselves, nor maintain relationships with individuals whom do so. The licensed medical marijuana patients whom come before you today do so out of respect to law enforcement. They desire nothing more than to share their stories of pain, and how using marijuana has affected their lives. In giving a fair perspective on this topic, we also include a section on the opposing arguments to the validity of claims made by these patients.

Contacts:

For more information on a particular topic, the following professionals can be contacted at:

Legal Questions: Attorney Warren Edson, 303-831-8188
Attorney Brian Vicente, 720-890-4247
Medical/ Scientific Questions: Robert Melamede, PHD, 719-262-3135
Matthew Schnur, Researcher, 719-439-0817

II. Introduction to Amendment 20:

For the last seven years Amendment 20 has allowed Colorado residents with severe debilitating medical conditions to use marijuana under the supervision of their doctors. Specifically, debilitating conditions are defined as:

* AIDS/HIV * Cancer * Cachexia (Sever Body Wasting)

* Severe Pain * Severe Nausea * Seizure Disorders

* Muscle Spasms * Multiple Sclerosis * Epilepsy

* Additional conditions may qualify

The chart below is a complete breakdown of conditions for which medical marijuana recommendations have been written:

Condition	**Number of Patients**	**% of Recommendations**
Cachexia	74	3%
Cancer	71	3%
Glaucoma	41	1%
HIV/Aids	58	2%
Muscle Spasms	506	24%
Seizures	87	4%
Severe Pain	1747	85%
Severe Nausea	444	21%

Please Note: Some overlapping exists between conditions and thus percentages will not = 100%.
Source: http://www.cdphe.state.co.us/hs/Medicalmarijuana/marijuanaupdate.html

Epidemiology :

The average age of patients is 43, with a range from 18-92 years old. Thus, unlike California's medical marijuana situation which has faced numerous attacks from minors receiving doctor recommendations for use, Colorado has no minors on the department of health medical marijuana registry. For a minor to become a licensed patient in Colorado, they must receive a recommendation from two separate physicians. Interestingly, about 73% of medical marijuana users are males. The highest concentrations of legal patients (43%) reside in the Denver-Boulder areas, with the rest distributed among 52 other Colorado counties. Approximately 61% of patients choose to assign a primary caregiver to grow marijuana for their medical needs instead of growing it themselves. As of 1/31/08 there were 2051 licensed medical users in the state, with a renewal rate of 57%.

Important Considerations For Patients and Law Enforcement:

1. It is the responsibility of law enforcement to protect any property confiscated during an investigation into a licensed medical marijuana patient.

Amendment 20 Section 2(e) States:

"Any property interest that is possessed, owned, or used in connection with the medical use of marijuana or acts incidental to such use, shall not be harmed, neglected, injured, or destroyed while in the possession of state or local law enforcement officials where such property has been seized in connection with the claimed medical use of marijuana. Any such property interest shall not be forfeited under any provision of state law providing for the forfeiture of property other than as a sentence imposed after conviction of a criminal offense or entry of a plea of guilty to such offense. Marijuana and paraphernalia seized by state or local law enforcement officials from a patient or primary care-giver in connection with the claimed medical use of marijuana shall be returned immediately upon the determination of the district attorney or his or her designee that the patient or primary care-giver is entitled to the protection contained in this section as may be evidenced, for example, by a decision not to prosecute, the dismissal of charges, or acquittal."

2. A patient is allowed to have 6 plants with 3 in flowering and 3 in vegetative growth. However, a patient may possess more than this quantity if it is in the opinion of their doctor that more is needed.

"(4) (a) A patient may engage in the medical use of marijuana, with no more marijuana than is medically necessary to address a debilitating medical condition. A patient's medical use of marijuana, within the following limits, is lawful:

(I) No more than two ounces of a usable form of marijuana; and

(II) No more than six marijuana plants, with three or fewer being mature, flowering plants that are producing a usable form of marijuana.

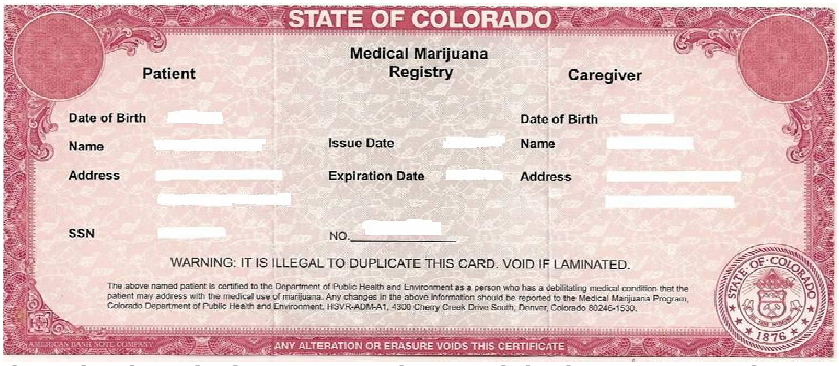
(b) For quantities of marijuana in excess of these amounts, a patient or his or her primary care-giver may raise as an affirmative defense to charges of violation of state law that such greater amounts were medically necessary to address the patient's debilitating medical condition.

3. A licensed patient may not use marijuana in public, which includes in the vehicle.

These important points are only a small section of Amendment 20. Both patients and law enforcement are strongly encouraged to read over Amendment 20 to ensure complete legal compliance.

How to Become a Patient:

1. The patient meets with their physician.
2. The physician fills out the Colorado Department of Health and Environment (CDPHE) medical marijuana registry form: http://www.cdphe.state.co.us/hs/medicalmarijuana/medicalmarijuanaforms.html
3. The patient sends the forms to the CDPHE with a $90 application fee.
4. The CDPHE verifies the information is correct on the form by calling the patient's doctor.
5. The patient receives a card like this or a refusal letter within 35 days of the CDPHE receiving the application.



A Special Note on Fraudulent Cards: Colorado medical marijuana cards are made by the American Bank Note Company and contain nearly all anti-fraud features that a check possesses'; watermarks, serial numbers, etc.

What an Officer Should do When Confronting a Patient:

1. Medical marijuana users are by legal definition debilitated with a chronic disease. Thus, to ensure safety begin by asking if they are potentially in any immediate medical emergency for which an ambulance might need to be contacted.
2. Once safety is established, ask for the patient's medical marijuana license if they have yet to give it to you.
3. Call Debra Tuenge at the CDPHE at (303)-692-2173 to verify the information on the card.
4. Properly package any paraphernalia, equipment, or evidence such that if it is returned to the patient/suspect the police department will not be liable for property damages.
5. An officer can only call the CDPHE to verify if a suspect is a patient. They may not inquire as to why or for what conditions the patient is being treated with marijuana.

"Section 14, paragraph 3 (a) permits authorized employees of state or local law enforcement agencies who have stopped or arrested a person who claims to be engaged in the medical use of marijuana and in possession of a registry identification card or its functional equivalent to access information in the confidential registry. This access is only for the purpose of verifying that an individual who has presented a registry identification card to a state or local law enforcement official is lawfully in possession of such a card."

III. Dispensaries, Caregivers, and Cooperatives:

Colorado's Amendment 20 allows patients to designate a "caregiver", or individual who has an active role in the patient's health to grow marijuana for them. More than half of all registered patients choose to assign a caregiver for their medical marijuana needs. After dozens of interviews with licensed patients and caregivers, we find the following reasons that patients choose not to grow marijuana for themselves:

1. Cost of a complete grow room:
   A complete growing operation requires at minimum two separate rooms where one will be used for vegetative growth and the second for flowering. Taking into account the pricing of high intensity lighting, climate and humidity controls, nutrients, bulbs, pumps, and numerous other equipment, the costs can range from as little as $2000 upwards to over $15,000 for a higher quality medicine.
2. Maintenance of a grow room:
   To be eligible as a legal medical marijuana patient, the individual must suffer from a debilitating condition or disease. As such, many patients report making the choice to assign a caregiver out of the observation that growing quality medicine requires daily maintenance. Nutrients must be calculated exactly, weekly pruning and adjustments to nutrient quantities, light cycles changed weekly, carbon dioxide regulation, and much more than could be explained in this discussion.
3. Fear of harm to self or family:
   By far the most reported reason for choosing not grow for themselves is the patient's fear of harm coming to them or their loved ones. Two patients interviewed whom wish to remain anonymous were doused in gasoline while a group of men held lit matches, threatening to set them on fire if the victims did not forfeit their medical marijuana over. Eventually it was discovered the criminals in this situation were the patient's neighbors, whom smelled the marijuana coming from the next-door house.

   Interestingly however, the largest fear by patients is not from criminals but rather from law enforcement. Numerous interviews uncovered fears of patients losing their family pets or children during police encounters, whether in custody battles or over accidental shots being fired. A custody case is currently underway in Arapahoe County where a mother may lose her children; not from neglect or child endangerment, but because she is a medical marijuana patient and the court feels the mother may not be responsible enough to raise her children

It would appear at first glance that patient's choose to utilize a caregiver strictly out of negative consequence; because it protects them and their loved ones. There are however, more positive reasons by which patients decide to utilize a caregiver. A caregiver may grow for multiple patients, which drastically reduces the cost of production. When a caregiver grows for numerous patients, a greater amount of variety

of marijuana strains may be grown, which gives each patient the ability to discover which variety works best for their medical needs.

As legal patient numbers increased across the state, medical marijuana dispensaries and cooperatives began developing. As of 2008, the authors of this booklet were able to identify eight dispensaries and one cooperative. The definitions of "dispensary" and "cooperative" are somewhat arbitrary; however the members of these caregiver groups value the differences highly. In a marijuana cooperative each member contributes to the whole, including the customers. A dispensary utilizes a small group of its members to provide its products and services to its clients. Whether one business model holds more legitimacy and quality of care to its members over the other still remains to be seen.

There are numerous advantages to both dispensaries and cooperatives, which include:

1. Having an actual business storefront creates a safe environment for patients. It creates a proper business with licensing and establishes the patient group in the community. Patients often report having to purchase medicine from street drug dealers. One 88-year-old woman was raped in Acacia Park, Colorado Springs, while attempting to obtain medicine from an area notorious for illegal drug activities.
2. Police know where the location is at. Having a single location where patients meet allows for increased focus on patient and community safety. It can be interpreted as a statement by the dispensary/cooperative that they wish to remain law abiding, not making secret deals in alleys or random houses.
3. A wider variety of services and choices in medicines. Not only are patients seeing a wider selection of marijuana strains to alleviate their symptoms, but now able to treat their conditions with alternative therapies. Dispensaries are offering medicated foods, lotions, balms, tinctures, gums, and drinks. Additional services being offered are yoga, massage therapy, legal seminars with attorneys, support groups, and monthly group events. A holistic approach to disease management, where the focus is not only on medication, but diet and exercise changes that can potentially heal, is being offered to patients whom may never have had these opportunities if never designating a caregiver.
4. Greater numbers of patients communicating what works and what doesn't for their disease allows for statistical data analysis. Such analysis allows scientists to identify trends between routes of marijuana administration (eating, smoking, vaporizing, etc), strains of marijuana (over 2000 types), chemical composition (over 78 cannabinoids), and how each of these variables compare to one another in treating a disease. Isaac Newton once said "If I have seen further it is because I have stood on the shoulders of giants". By communicating successes and failures in patient's marijuana therapies, dispensaries have been enabled to identify a greater therapeutic

potential in the new patient's optimal treatment plan. To learn more about these findings, please visit the Genovations Laboratories website.

5. Availability of medicine is always assured. Even the best medical cannabis growers have had problems with pests, low yields, to high of yields to maintain legality, equipment failure, or some other unforeseeable problem which might limit their ability to keep a constant supply of medicine. A dispensary eliminates the reliance on a single garden or single crop.

Spider mites are a common pest affecting marijuana plants in Colorado. They can destroy an entire crop in less than 3 weeks if left untreated. With a short life cycle (~3-5 days), one treatment with pyrethrum, the most common pesticide used for mites, only destroys those mites which are alive. It does not kill their eggs. Thus pyrethrum treatments must be continuous for multiple applications. Other more effective chemicals exist but must never be used during the last weeks of flowering. Dispensary research has found certain plant essential oils (lemongrass, wintergreen, thyme) along with chemicals naturally occurring in marijuana called terpenoids, can provide a safe, organic pest treatment.

Aphids like mites are among the most common pests of Colorado marijuana. Any type of pest can carry infectious agents on them and are thus potentially dangerous to an individual already in a compromised state of health. Tedious daily examination of leaves, stems, and soil ensures that if a pest contamination occurs, it is treated immediately before the problem becomes unmanageable by organic methods.

Over the past 3 years Colorado has seen a slow increase in patients deciding to have their medicine provided by dispensaries. These dispensaries have been in tight competition with each other with a beneficial consequence of lower prices on services, a wider variety of alternative services, and an overall increase in the quality of compassion by which they serve their patient base.

Quality of care has risen to the level of non-profit biomedical research. Genovations laboratory is a Colorado based medical marijuana research lab. While ensuring legality by not endorsing medical use or distributing marijuana, Genovations scientists observe the effects of marijuana use on medical patients. With the use of questionnaires and diagnostic testing Genovations is on its way to becoming a worldwide leader in marijuana based clinical data. Genovations is currently working with the National Institutes of Health on federal approval for a clinical study involving the evaluation of genetic and proteomic changes in diabetics whom use medical marijuana.

In summary, collective organization of patients is beneficial to both the police and patient communities by ensuring safety, both in a legal and medical setting.

Proper Safety Guidelines for Dispensaries:

Colorado's Amendment 20 gives no legal guidelines to caregivers or dispensary owners. While each county in California has adopted their own codes of conduct for dispensaries, Colorado is left wide open with no regulation. Regulation is essential in a medical setting, especially when the primary medicine being dispensed is one of the most widely abused recreational drugs in the world.

In this section the authors discuss proper operational guidelines for dispensaries. As the medical marijuana community grows larger, confrontations with law enforcement, the media, and the general community at large are inevitable. Prior to such circumstances, opening dialogue between law enforcement and dispensaries is essential to promoting a peaceful transition in the legal community as dispensaries become a societal norm.

The following list is a suggested code of regulation for dispensaries to ensure safety and legal compliance, while maintaining the highest standard of care for their patients:

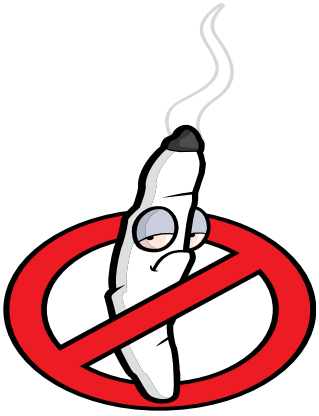
1. No dispensary will be allowed to open within 1000 feet of a school or within the same business park that is associated with high volumes of children passing through. This may include candy stores, toyshops, parks, or other related areas.
2. All dispensaries must pay local, state, and city taxes. This provides certain protections as a business while establishes a difference between the illegal street drug dealer and a medical service provider. This also includes writing receipts for all transactions.
3. All dispensaries must have licensed staff present during hours of operation. No vending machines, drive up windows, or unsupervised transactions take place.
4. A dispensary will only service as many patients as the employees may personally take care of. Amendment 20 clearly states that a caregiver is an individual who takes a direct role in the healthcare of the patient. A dispensary is not a Wal-Mart. A caregiver must know each patient by face, his or her conditions or diseases, and regularly communicate to identify if their treatment is working to the patient's needs.
5. No medicine will be sold or purchased from outside sources, especially from non-licensed individuals. As this is medical marijuana, it is being used by sick patients. Marijuana from the streets may be contaminated, unflushed*, laced, or mislabeled. Proper medical treatment needs consistency. Medicine being grown from the same sources by the same techniques, with known genetics increases the success rate of maintaining consistency.
6. Every dispensary will have contact information readily available for their clients regarding local drug abuse treatment centers, as well as educational materials on substance abuse harms. This is not limited to marijuana, but also includes opiates and alcohol. If the owner of a dispensary suspects one of their patients has a problem, they are expected to discuss it with that patient. Dispensary owners are strongly encouraged to meet with a drug abuse counselor on a

regular basis for advice/training on handling drug abuse situations. Additional training on drug abuse can also be found at most community colleges in the health sciences or nursing departments.

7. Dispensaries must offer additional forms of medicine besides its raw smoking form. This can include, but is not limited to; vaporizers, hash oils, drinks, lotions, balms, foods, sublingual drops, teas, or other routes of administration. In addition, there should be ample variety of smokeable medicine. Statistical analysis shows a 73% general medical market preference for indica strains over sativas, however, several disease categories (hypertension, neuropathic) show mixed preferences for both indicas and sativas. Dispensaries should utilize questionnaires to identify what general trends in patient preferences and focus their products on what best suits the patient's medical needs, not recreational needs.
8. Dispensaries should limit monthly patient purchases. Questionnaires distributed for 1 year to all patients at a dispensary in Colorado demonstrate that 93% of licensed patients can successfully alleviate their condition for which they are using marijuana with 4 ounces or less each month. When there are certain patient's who legitimately need more, they will be required to obtain a note from their doctor, or sign a consent form for the dispensary owner to speak to the patient's doctor for consent. This rule is essential to ensuring that medical marijuana is not being resold on the street, nor is the patient abusing the drug. Products that have no psychoactivity (lotions, THC-free products) have no limit.
9. Dispensaries should maintain typical business hours comparable to stores in its immediate vicinity. Dispensaries should not be open after dark and not make exceptions to the hours by letting patients come to the store when it is closed. If a patient is having a medical emergency and needs medicine, the dispensary owner may deliver the medicine to the patient before/after normal hours of operation.
10. Prior to opening, the potential dispensary owner should contact the local county sheriff's office and make known their intentions. This should demonstrate the owner's intentions in maintaining legal compliance and a hopeful ongoing relationship between the two communities.
11. Employees of dispensaries should regularly maintain communication with neighbors. Owners should ask neighbors about smell, noise, loitering, or any other potential concerns. Additionally, dispensaries should keep theirs and their neighbor's business areas clean.
12. Patients should have access to educational resources about the potential harms as well as potential benefits to using marijuana. With this in mind, employees and dispensary owners should have at minimum a basic understanding of human anatomy & physiology, health & medicine, or have a trained professional in one of these fields available at regularly scheduled times.
13. Maintaining a patient's health is more than providing medicine; it also includes providing emotional support. Countless research studies, beginning in the 1920s with identification of the placebo effect and continuing into the modern science of today, all confirm that disease progression and outcome can be negatively influenced by depression. Depression and anxiety disorders are far more

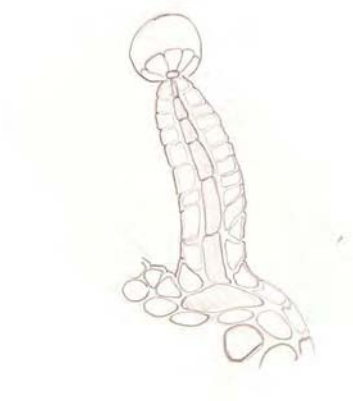
prevalent in the sick and debilitated communities than in the general healthy populace. Providing movie nights, game nights, field trips, group activities, barbecues, etc, can significantly increase a patient's sense of belonging to something, making them feel less alienated because of their medical condition. Research shows that individuals who feel a sense of belonging to something are less likely to become depressed than those who feel little-to-no attachment.

14. All dispensaries will be equipped with at least three forms of security methods. These security methods can include:
    a. Day/Night security cameras on backup generators
    b. Steel doors or solid wood doors with deadbolts
    c. A silent alarm at numerous easily accessible locations
    d. Pepper spray or a self-defense only form of equipment
    e. Bulletproof glass
15. No weapons will ever be allowed in any dispensary for any reason unless it is carried by law enforcement or an officially licensed armored vehicle service. This includes any type of knife longer than that found on nail clippers. If a patient brings a weapon into a dispensary for any reason the police will be notified.
16. All patients must call ahead and make an appointment prior to coming to the dispensary. No more than 3 patients per employee should be in the dispensary at a time.
17. No dispensary will display an advertisement for their company publicly on the building that suggests marijuana may be in the store.
18. No patients are allowed to medicate on the premises. A patient may try a single vaporizer inhalation. State laws prohibit smoking in public stores. While the dispensary is not open to the public, it is still a good practice as it protects patients whom choose not to smoke marijuana. An important consideration in this regard is comparable to liability of bars and drunk drivers. If a patient were to medicate at a dispensary then cause an accident, that dispensary owner will be held liable just like a bartender who sold too many drinks to one person.



19. Dispensaries are encouraged to set up an indigent program. Such a program should support a lower cost payment option for patients on Medicare, Medicaid, or low-income patients with families.
20. If a patient is under the age of 21 they must have both their parents consent before assigning a dispensary as their caregiver.
21. In order for a dispensary to service a client, they must be the caregiver for that client. Merely being a licensed patient is not sufficient. A bona fide medical relationship must exist.

22. When patients come to the dispensary for products, there is a 20-minute maximum time limit per visit. This does not apply to special events or pre-arranged meetings.
23. Have a unique set of rules & regulations that best fits the needs of your patient base (no profanity, dress code for employees, etc) and have these rules on a poster board for easy viewing. Patients need to feel comfortable & secure in their treatment and treatment facilities. Tailoring a set of rules & regulations ensures this comfort & safety.
24. Check inventory daily. Know which employee is handling what material and when. Have a password entry Point of Sale system to track inventory handling to identify theft.
25. Never keep more than a days worth of inventory out on display in the dispensary. Always keep excess inventory in a sturdy safe that is either bolted or set in the foundation of the facility.
26. Get a state attorney on retainer prior to opening the dispensary doors. Have a contract designed stating the attorney will only advise you on maintaining legal compliance with the state. Go over entire dispensary concept with the attorney. Only do activities condoned by the attorney.
27. Periodically use a microscope to identify that the trichomes are intact and that kiefing is not occurring by your employees.



TOP: A 30x magnified view of Purple Dragon, a strong indica hybrid. LEFT: A basic illustration of a capitate-stalked glandular trichome. The trichome is where approximately 95% of the plant's medical constituents are stored. Trichomes often litter the surface of well-grown marijuana buds and give high quality cannabis its sticky feeling. Kiefing is a process whereby a person uses silkscreen in a box and rigorously shakes the marijuana buds back and forth so as to remove the trichomes. The collected trichomes are often pressed with a rolling pin in wax paper with minimal heat to create hash. Street dealers will often "kief" their buds before selling. This greatly reduces the medical efficacy of the marijuana.

28. A dispensaries pricing should be stable, consistent, and well below typical recreational street prices. When a patient chooses to use marijuana as medicine, they put themselves in legal danger. Thus, it is illogical for a sick individual to choose a medicine that costs more than conventional pharmaceuticals while simultaneously putting themselves in harms way.

29. The dispensary will use a computer to notify employees one month before a client's medical marijuana license expires. The client should be made aware of their need to re-apply. Previously registered patients whom are not in possession of a current license are no different than non-licensed individuals and dispensary workers must not distribute any materials to that person until licensed.
30. Products should be tested when questionable for mold, insects, or bacteria. Indeed, several outbreaks have occurred whereby teenagers have died from fungal contamination of the lungs from smoking moldy cannabis. A small sample from each plant may be tested via a "Gram stain" or mold toxin dye.
    a. Performing a Gram stain:
        i. Create a slide smear with the most potentially contaminated sample of cannabis from your batch
        ii. Add several drops of crystal violet dye, wait ~ 20-40 seconds. Gently remove the dye with purified water.
        iii. Add iodine for 60 seconds, then gently wash with purified water again.
        iv. Add several drops of decolorizing agent until no visible dye remains on the smear.
        v. The dye basic fuschin is used to counterstain. After a 60 second wash with basic fuschin, gently wash with purified water and spot dry with bibulous paper.
        vi. Gram + bacteria presence is indicated by blue-stained bacterial cells, whereas Gram – bacteria will stain pink.
    b. Performing mold identification testing:
        i. Aflatoxins and fumonisin testing kits are available through multiple biotech companies over the internet. Kits specifically designed for plant and grain materials should only be used, as some test kits are designed to use blood, serum, and urine as the media.

Products should have as consistent a dosage as possible. Therapeutic efficacy can only be achieved with repeatability of desired effects. This is an especially important factor when considering that numerous clinical effects of cannabinoids, which include THC, are biphasic in nature. Biphasic refers to a chemical having opposite effects on the body when administered in different doses. Biphasic responses may explain diagnostic testing-variation in various clinical trials, including appetite, heart rate, blood pressure, anxiety, and depression.

a. When preparing medicated baked goods, titration of a consistent dosage is especially important. Many producers of baked goods make medicated butter. For health reasons, it is suggested to switch to olive oil, which not only reduces cholesterol but also increases natural endocannabinoids that reduce inflammation. When preparing medicated olive oil, two approaches may be taken:
    1. 1 part water + 3 parts olive oil + dissolved hash oil. Use a seperation funnel to remove the water. This process removes sugars and hydrophilic constituents from the

olive oil. While slightly less potent in medical strength, patients generally find it to be better tasting and more uplifting, non-drowsy.

2. All olive oil and dissolved hash oil. Patients still find the olive oils to be more uplifting than butters, however, this non-water method is more sedative than the above method.
3. Having an efficient hash making technique is essential to dosing medicated foods. Cooking leaf material is unreliable for consistency, as butter/oil remains in the leaf; each batch of leaf may be more/less potent than the next. While each batch of hash will have varying concentrations of chemicals, using the same quantity of hash each time significantly lowers the margin of variation between batches.

A dispensary should ultimately be designed in a similar fashion to a pharmacy, but with a wider range of holistic treatment options and a higher level of personal care. A true caregiver relationship relies on a personal understanding of the patient's needs, not what has the highest yield, most psychoactivity, shortest harvest time, etc.

For more information on proper dispensary guidelines and important information for dispensary owners, the below citations provide an excellent source of diversified opinion. Indeed, no one group has united a generally accepted regulatory guideline for dispensaries. For this reason, it is imperative that communications begin between dispensary owners and law enforcement to ensure safety for the sick and debilitated

1. Grinspoon, Lester. 2001. On the pharmaceuticalization of marijuana. International Journal of Drug Policy. 12: 377-383.
2. Thomas, Huw. 1996. A community survey on the adverse effects of cannabis use. Drug and Alcohol Dpendence 42: 201-207.
3. Ware, Mark, et al. 2006. Evaluation of herbal cannabis characteristics by medical users: a randomized trial. Harm Reduction Journal 3: 32-38.
4. O'Connell, Thomas, et al. 2007. Long term marijuana users seeking medical cannabis in California (2001-2007): demographics, social characteristics, patterns of cannabis and other drug use of 4117 applicants. Harm Reduction Journal 4: 16.
5. Korf, Durk, et al. 2007. Differential responses to cannabis potency: A typology of users based on self-reported consumption behaviors. International Journal of Drug Policy 18: 168-176.

IV. Marijuana as Medicine:

Marijuana has been used for thousands of years as both a medicine and intoxicant. While many marijuana users believe the plant to be relatively harmless; many believe that no one has ever died from marijuana. This is not fact. Below are documented cases of individuals dying from the use of marijuana. Understanding the circumstances surrounding the deaths of these patients is an essential tool for the dispensary worker and owner. Patients with cardiovascular diseases should take special care when trying new medicines derived from marijuana.

1. Tatli, Ersan, et al. 2007. Cannabis induced coronary artery thrombosis and acute anterior myocardial infarction in a young man. International Journal of Cardiology 120: 420-422.
2. Lindsay, Alistair, et al. 2005. Cannabis as a precipitator of cardiovascular emergencies. International Journal of Cardiology 104: 230-232.

An important observation that strengthens support for the need to develop specific medical strains is the fact that the non-psychoactive cannabinoid CBD may actually prevent these cardiovascular emergencies that have occasionally occurred from cannabis use. These deaths were likely caused by a low CBD, high THC strain.

1. Hayakawa, Kazuhide, et al. Cannabidiol prevents infarction via the non-CB1 cannabinoid receptor mechanism. Neuropharmacology and Neurotoxicology 15: 2381-2385.

Side Effects of Marijuana Use:

If a drug has the ability to change physiology for the better in one type of disease pathology, it is only logical that it will have the potential for harm in other types of physiology that may not need altercation. For this reason, marijuana must be respected as a drug despite the recreational beliefs that it is not harmful.

There are far too abundant of rumors concerning marijuana use: propagated both by media and the federal government (marijuana causes permanent insanity, makes men's penis' shrink, etc). There are legitimate concerns about long term marijuana use that must be taken into consideration when deciding to use the plant medicinally. The following is a list of research-derived side effects that can happen to marijuana users:

- Anxiety, panic attacks
- Exacerbate schizophrenia in predisposed individuals
- Increase chances of lung infections
- Depersonalization, amotivational syndrome

1. Campbell, F.A., et al. 2001. Are cannabinoids an effective and safe treatment option in the management of pain? A qualitative systematic review. Br. Med. J. 323, 13–16.

2. Leweke, F.M., 2002. Acute effects of cannabis and the cannabinoids. In: Grotenhermen, F., Russo, E. (Eds.), Cannabis and Cannabinoids. Pharmacology, Toxicology and Therapeutic
3. Potential, The Haworth Integrative Healing Press, New York, pp. 249–256.
4. Leroy, S., et al. 2001. Schizophrenia and the cannabinoid type 1 receptor. Amer. J. of Medical genetics

Despite marijuana's ability to induce harmful side effects, many people of hundreds of disease types have claimed to find therapeutic benefit to its use. In the past few decades the medical and scientific communities have discovered numerous mechanisms by which the components of marijuana can both alleviate and cure certain diseases. In the past month, the American College of Physicians, the nations second largest collaborative of medical doctors, published a formal 13 page statement whereby they claim:

"Evidence not only supports the use of medical marijuana in certain conditions but also suggests numerous indications for cannabinoids. Additional research is needed to further clarify the therapeutic value of cannabinoids and determine optimal routes of administration. The science on medical marijuana should not be obscured or hindered by the debate surrounding the legalization of marijuana for general use."

- Please click here to be brought to the ACP website to read their position on medical marijuana.

Marijuana is a complex mixture of literally hundreds of chemicals, dozens of which have been identified to have anti-inflammatory, analgesic, sedative, stimulatory, depressant, and anti-depressant activities. Again, the author's emphasize the need for dispensaries to use consistent growing parameters and dosaging in alternative products to ensure reproducibility in effects and thus minimize harmful side effects.

Why Use Marijuana?

Despite fears of federal prosecution, patients continue to use medical marijuana to alleviate their conditions. For some patients, discovery of marijuana's therapeutic use came from recreational experiences with the plant while experiencing pain, nausea, or some other condition that caused discomfort. For others, they tried numerous FDA approved pharmaceuticals and either did not find satisfactory results or could not bear the side effects. Individual patients often describe similar undesirable side effects from their pharmaceutical medications. In a macroscopic analysis, these complaints represent but a small fraction of an overwhelming epidemic plaguing our nation's medical industry.

"Death by Medicine" was published in 2007 by five medical doctors and PHDs. It is a complete 28-page documentation of epidemic problems with the current American medical system. The statistics below were collected across the country:

- 2.2 million hospitalizations each year from adverse effects to prescription drugs
- 7.5 million unnecessary surgeries per year
- 8.9 million unnecessary hospitalizations yearly

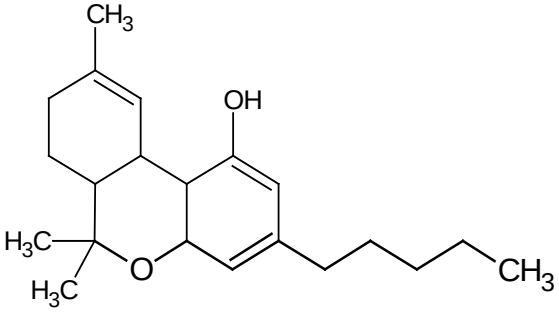
- American medical system found to be leading cause of death in US at 783,936 deaths compared to 699,697 from heart disease in 2001

The authors further state in the introduction:

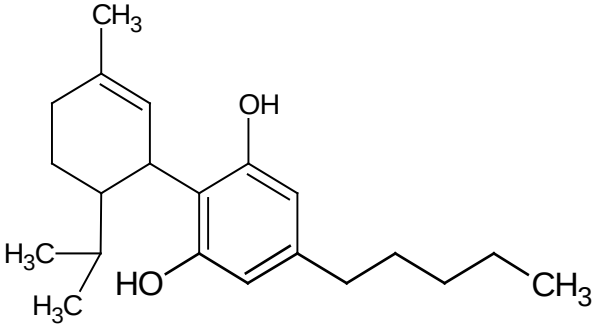
"Natural medicine is under siege, as pharmaceutical company lobbyists urge lawmakers to deprive Americans of the benefits of dietary supplements. Drug-company front groups have launched slanderous media campaigns to discredit the value of healthy lifestyles. The FDA continues to interfere with those who offer natural products that compete with prescription drugs.
These attacks against natural medicine obscure a lethal problem that until now was buried in thousands of pages of scientific text. In response to these baseless challenges to natural medicine, the Nutrition Institute of America commissioned an independent review of the quality of "government-approved" medicine. The startling findings from this meticulous study indicate
that conventional medicine is "the leading cause of death" in the United States .The Nutrition Institute of America is a nonprofit organization that has sponsored independent research for the past 30 years. To support its bold claim that conventional medicine is America 's number-one killer, the Nutritional Institute of America mandated that every "count" in this "indictment" of US medicine be validated by published, peer-reviewed scientific studies. What you are about to read is a stunning compilation of facts that documents that those who seek to abolish consumer access to natural therapies are misleading the public. Over 700,000 Americans die each year at the hands of government-sanctioned medicine, while the FDA and other government agencies pretend to protect the public by harassing those who offer safe alternatives. A definitive review of medical peer-reviewed journals and government health statistics shows that American medicine frequently causes more harm than good."

This is not to say that just because something is natural that it is healthier than a pharmaceutical. However, natural alternative medicines of whole-plant extract origin do have unique properties ignored by conventional medicine due to the need for scientific methods. FDA approved pharmaceuticals must be exactly titrated dosages of a single active ingredient, or combination of known ingredients. Below is a list of chemicals in marijuana:

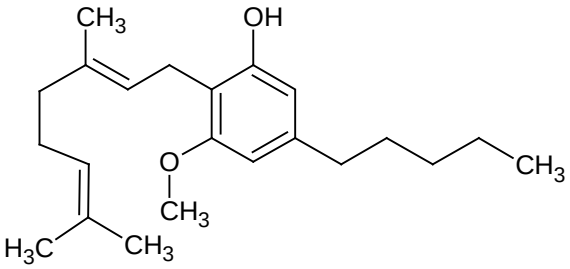
1. Cannabinoids: 78 known as of 2008.
2. Terpenoids: 103 known
3. Fatty Acids: 12 known
4. Non-cannabinoid Phenols: 16 known
5. Flavanoids: 19 known- these are potential antioxidants



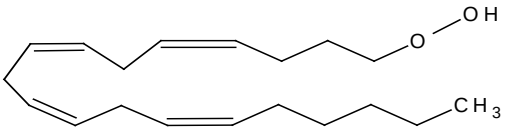
Tetrahydrocannabinol (THC)



Cannabidiol (CBD)



Cannabigerol



Anandamide

Anandamide is what the human body produces naturally that binds to the cannabinoid receptors. It is also what THC mimics to cause psychoactivity. Anandamide is what gives chocolate its mood elevating effects in some individuals.

Many of the cannabinoids and terpenoids found within marijuana work together to create an additive effect called synergy. Synergy refers to an increased effect caused by combining two or more drugs, an effect that could not be caused by either drug alone. Synergy of cannabinoids is supported by the fact that Marinol (synthetic, pure THC), has a higher incidence rate of panic attacks and paranoia than clinical studies utilizing whole marijuana plant. The following list describes comparisons in medical efficacy of marijuana constituents to conventional medications, in addition to illustrating point of potential synergy:

1. CBD, CBG, CBN, β-myrcene(terpenoid), quercitan(flavanoid), and cannflavin A, are but a few constituents other than THC that exert anti-inflammatory effects.
2. Cannflavin A is 30x more potent than aspirin in reducing inflammation in rheumatoid synovial cells (arthritis model).
3. THC has 20x anti-inflammatory effects of aspirin, twice that of hydrocortisone
4. CBD has anti-inflammatory properties at lower doses than aspirin
5. Quercitan is a powerful antioxidant. Also found to be anticarcinogenic and anti-inflammatory, which may mitigate the potential for marijuana smoking to cause lung cancer.

- Source: Chapter 7 of "Medical uses of cannabis and Cannabinoids", Geoffrey Guy, 2004.

Marijuana is an extremely difficult plant to study for clinical effects due to the variation in the abundant amount of therapeutic chemicals. The scientific method applied to pharmaceuticals does not currently allow for synergistic therapies, likely because of their variation in outcome between individuals. Ultimately, the true therapeutic potential of marijuana remains untapped until a new scientific method is developed to identify clinical outcomes with varying quantities of multiple chemicals.

A Few Words From the FDA and NIH:

Ironically on April 20, 2006 the FDA made a press release stating:

"Marijuana is listed in schedule I of the Controlled Substances Act (CSA), the most restrictive schedule. The Drug Enforcement Administration (DEA), which administers the CSA, continues to support that placement and FDA concurred because marijuana met the three criteria for placement in Schedule I under 21 U.S.C. 812(b)(1) (e.g., marijuana has a high potential for abuse, has no currently accepted medical use in treatment in the United States, and has a lack of accepted safety for use under medical supervision).

Furthermore, there is currently sound evidence that smoked marijuana is harmful. A past evaluation by several Department of Health and Human Services (HHS) agencies, including the Food and Drug Administration (FDA), Substance Abuse and Mental Health Services Administration (SAMHSA) and National Institute for Drug Abuse (NIDA), concluded that no sound scientific studies supported medical use of marijuana for treatment in the United States, and no animal or human data supported the safety or efficacy of marijuana for general medical use. There are alternative FDA-approved medications in existence for treatment of many of the proposed uses of smoked marijuana."

What is interesting is that wording is careful to only specify "smoked" marijuana. Devices are now available called vaporizers. Vaporizers do not use fire for the combustion (burning) of marijuana. Instead, they use heat to vaporize the medicinal materials without causing the formation of carcinogens. Studies have unequivocally confirmed the effectiveness and safety of vaporization.

- Hazekamp, Arno, et al. 2005. Evaluation of a vaporizing device (Volcano^{R}) for the pulmonary administration of tetrahydrocannabinol. Journal of Pharmaceutical Sciences 95: 1308-1317.

It is also noteworthy that the FDA statement mentions the National Institute of Health. Apparently, there is no sound evidence that marijuana has therapeutic potential, but abundant research to support its harmful side effects. One would have to question the validity of the science that supports these potential harms if they were performed by the National Institute of Health, as this government funded organization published research proving that the psychoactive component of marijuana, THC, has a greater antioxidant capacity than both vitamins A and E. These findings occurred eight years prior to the FDA statement that no valid scientific research supports medical marijuana!

- Hampson, AJ, et al. 1998. Cannabidiol and (-)Δ^{9}-tetrahydrocannabinol are neuroprotective antioxidants. Proceedings of the National Academies of Science 95: 8268-8273.

Conclusion:

Colorado, along with 11 other states have now legalized the use of marijuana for medical purposes. Given that it remains federally illegal despite patients, researchers, and doctors pleas for re-classification, it is up to dispensary owners and caregivers to represent this growing movement with ethics, consistency, and legality when possible. As a relatively unregulated industry dispensaries will progress in an exponential and profit-oriented fashion. As an alternative therapy that poses numerous risks, both medical and legal, it is essential that dispensary owners expand availability of cannabis medicines in a fair and appropriate manner.

This presentation was designed to educate both dispensary owner and law enforcement. Communication between these two groups is essential to the health and well being of patients. The authors do not make claim to performing any illegal activities and merely provide these materials as a means to initiate a safe, well-rounded business model that maximizes benefits to all the citizens of the states in which medical marijuana is allowed. We thank you for your interest in this topic and welcome your input.

All questions and inquiries may be sent to:

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